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U.S. Naval Medical Field Research Laboratory,
Camp Lejune, N.C.
Naval Medical Field Research Laboratory

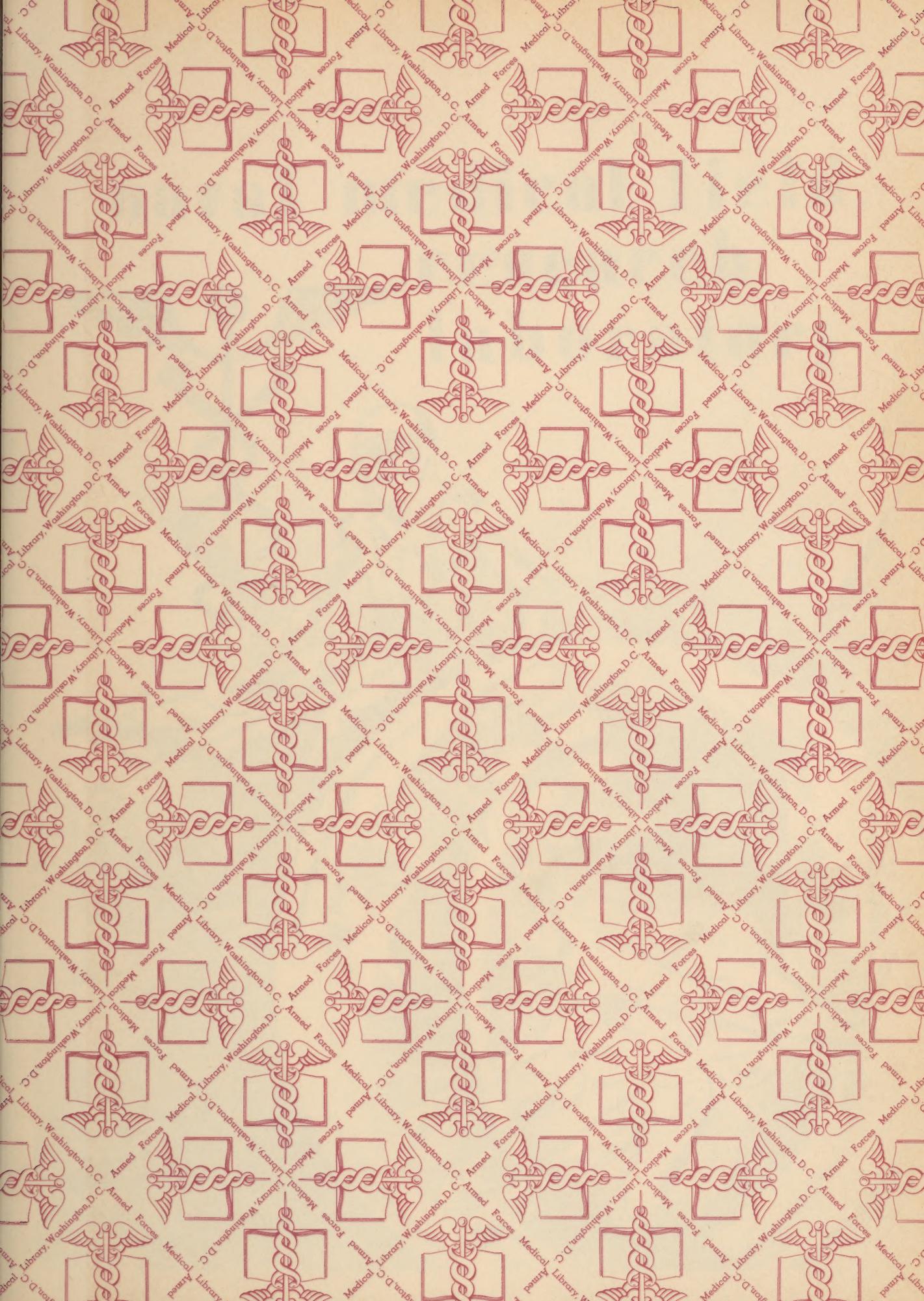
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naval medical field research laboratory



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U.S. Naval Medical Field Research Laboratory, Camp Lejeune, N.C.

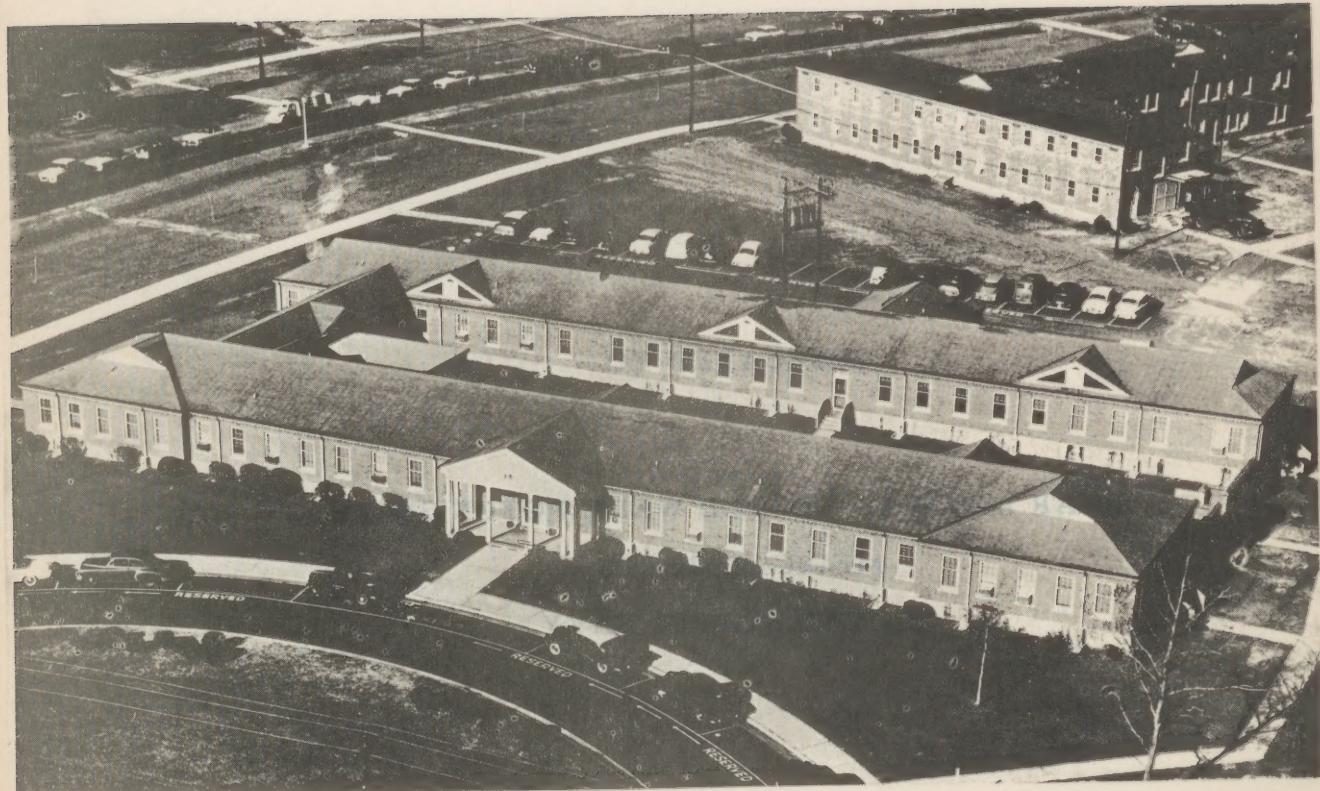
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DEDICATED TO

REAR ADMIRAL HAROLD WELLINGTON SMITH
MEDICAL CORPS
UNITED STATES NAVY

integrated into the general hospital

Camp Lejeune was selected as the logical site because it provided close proximity to the field of combat troops maneuvering under simulated battle conditions. This was considered advantageous in that it allowed staff personnel to gain first hand information at the field level and, in turn, to evaluate material and personnel under field conditions. Close liaison with other research and development activities is maintained in order to prevent unnecessary duplication of effort.



NAVAL MEDICAL FIELD RESEARCH LABORATORY

BACKGROUND

The U. S. Naval Medical Field Research Laboratory was established in August 1943 by joint agreement of the Commandant of the Marine Corps and the Chief of the Bureau of Medicine and Surgery. This action was prompted by the realization that many medical problems peculiar to amphibious troops and the Marine Corps in general, just as those of the aviation and submarine branches, deserved special consideration and were not being adequately cared for by general military medical laboratories. The mission of the Laboratory is to conduct research, development and testing to serve the needs of the Medical Department in its support of the Marine Corps and amphibious operations. This mission is integrated into the general research program of the Navy.

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DEPARTMENT OF PERSONNEL PROTECTION



The mission of this department is to design protective armor, in accordance with the applicable military characteristics set forth by field forces of the Navy and Marine Corps. Its activities may be summarized as follows:

1. To conduct all tests which are considered necessary in connection with any particular design except final ballistic and service testing.
2. The construction of prototypes for field evaluation by appropriate military units. Standard patterns are provided for acceptable prototypes since such prototypes must be amenable to practical industrial mass production methods.
3. This department serves as a repository for all material concerning the design of personnel antifragmentation equipment in the Navy Department and maintains such records of all other programs (world wide) as are available. It is the aim of this department to conduct such research and development as is necessary to provide the Navy and Marine Corps of the United States with the best protective clothing possible.



DEVICE FOR TESTING EFFECTIVENESS OF BODY ARMOR



The mission of the Department of Equipment Testing and Development is three-fold:

1. To develop field medical equipment for improving the effectiveness of medical organizations supporting the Fleet Marine Force.
2. To test and evaluate field medical equipment designed by other activities.
3. To design, fabricate, and test unique scientific instruments required by other departments at NMFRL for the accomplishment of their missions.

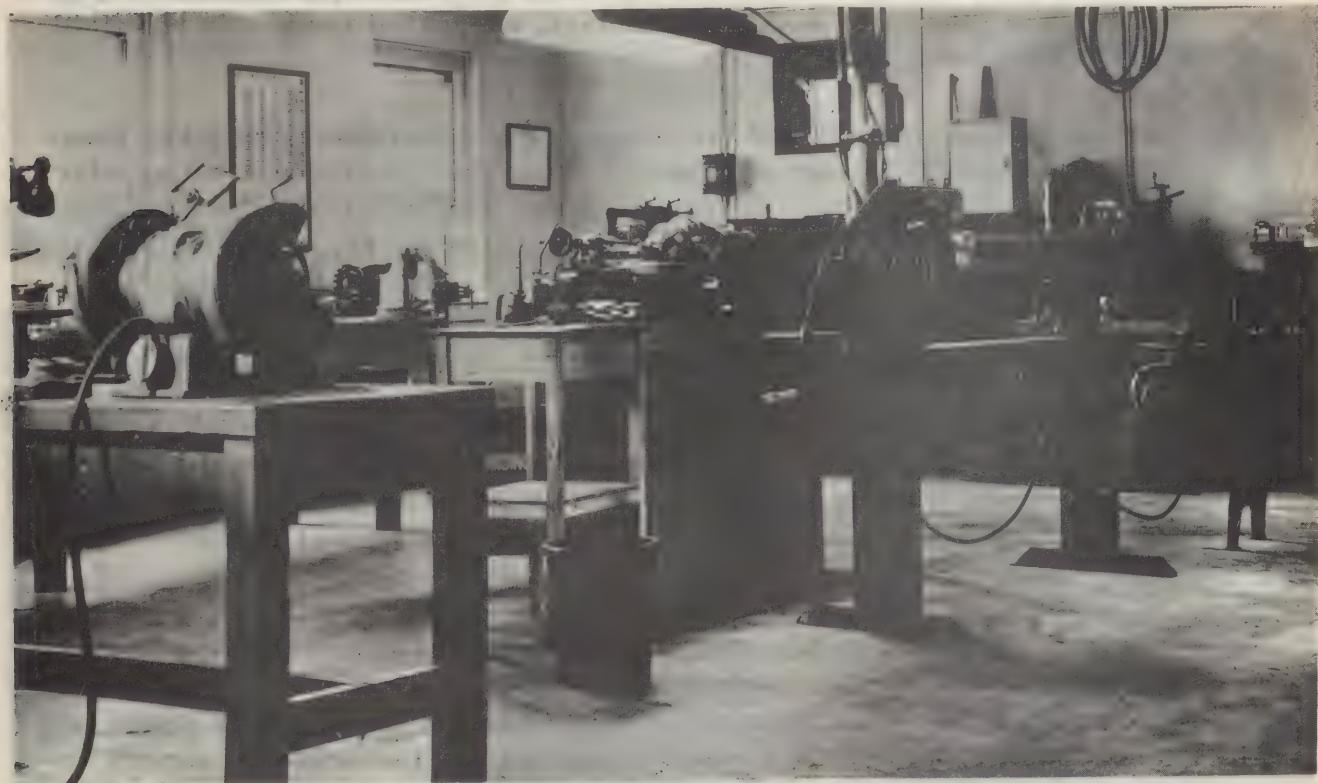
The department equipment and facilities include the following: A completely equipped carpenter shop; a metal shop; a drafting section; and a testing laboratory equipped with fabric and material testing machines, accelerated weathering apparatus, and a climatic chamber capable of producing temperatures from -85°F . to $+200^{\circ}\text{F}$. at simulated altitudes from ground level to 60,000 feet.

The ideas or instructions which initiate a project for the department come from many sources. Chief among these are informal contacts with field medical personnel and NMFRL Staff Members, and

formal contacts with organizations such as the 2nd Medical Battalion of the 2nd Marine Division, the Naval Field Medical and Dental Material Board, the Armed Services Medical Materiel and Standardization Committee, and the Marine Corps Equipment Board. The results of tests or developments from these ideas are published by letter or formal report.

Representative samples of the department's work are as follows:

1. Participation in the development of field medical chests, hospital trailers, collapsible litter supports, lantern reflectors, field shower units, x-ray darkroom facilities and mass casualty evacuation equipment.
2. Testing and evaluation of splints, automatic syringes, litters, new types of shelters, sterilizers, pressure-suction apparatus, operating lights, bandages, first aid kits, blood shipping containers, cots and medical chests.
3. Construction of laboratory equipment such as high-intensity burn sources, high-altitude chambers, pressure control apparatus, and instruments for personnel proficiency evaluation (sight, hearing, reaction time, etc.).



METAL WORKING SHOP

DEPARTMENT OF PHYSIOLOGY



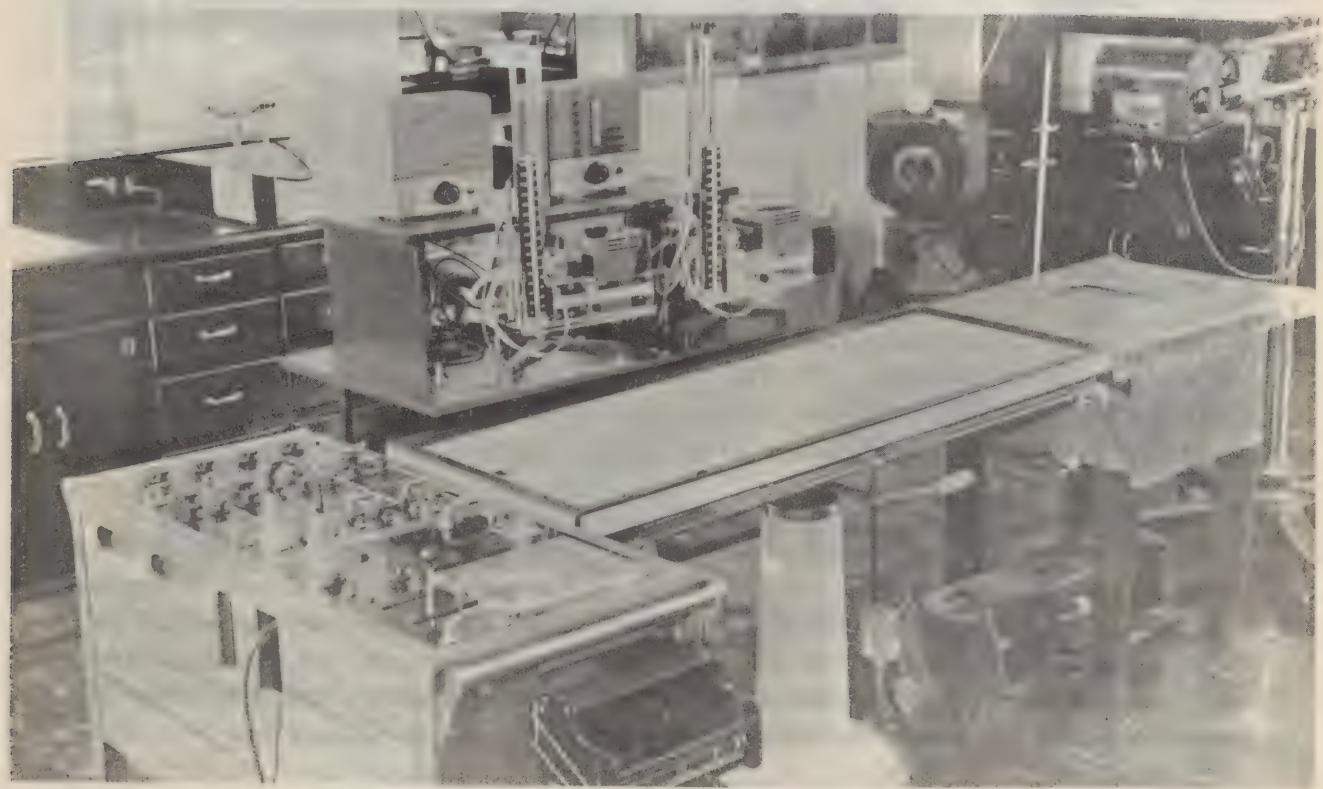
The Department of Physiology has as its primary mission the accomplishment of research which is applicable to the support of Marine Corps troops in the field. Secondly, the department serves as an instrument whereby certain medical devices and techniques such as resuscitators and other life saving equipment, suggested for use in the field, may be evaluated.

The equipment and facilities of the department are those found in any modern physiology research laboratory. Included are: an electrocardiograph, pressure transducers for determining blood pressure, instruments for assaying various respiratory gases, colorimeters for measuring blood pigments, etc. Attached to the department is an extensive animal facility maintaining a variety of experimental animals such as dogs, rabbits, guinea pigs, etc.

Major current research is concerned with determining the most efficacious treatment of shock caused by flash burns. In this investigation various plasma expanders and drugs are being evaluated in an attempt to find the best means of combating this type of shock.

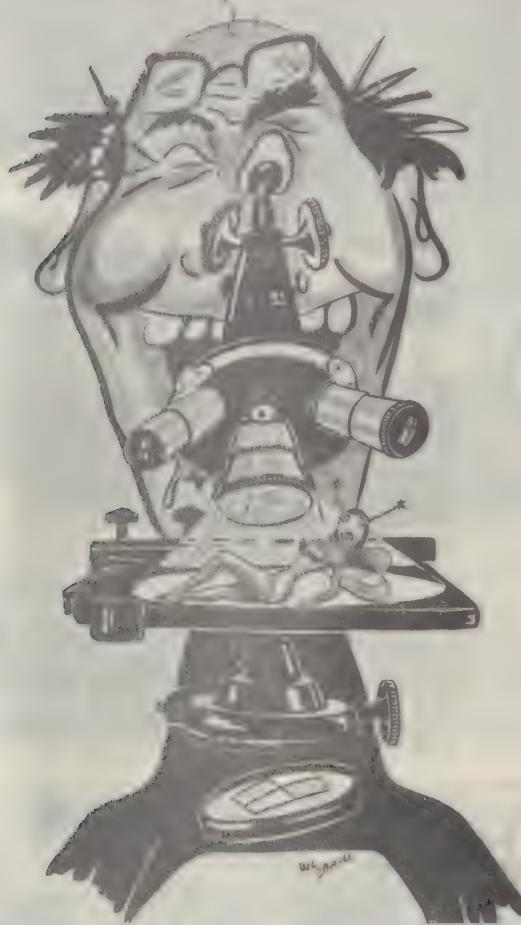
Some of the projects which have been completed by the department in the past few years are: A comparison of intravenous and intra-arterial transfusion in hemorrhagic shock; an evaluation of noradrenalin (an adrenalin-like substance) as an adjunct in the treatment of shock; the evaluation of various drugs in the prevention of seasickness; the evaluation of glycerol pectate, a potential new plasma substitute; and a comparison of the effectiveness of various plasma substitutes in burn shock.

ANIMAL FACILITY



PHYSIOLOGY LABORATORY

DEPARTMENT OF MICROBIOLOGY



The Department of Microbiology is equipped for bacteriology and virology research. Its primary function is the study of infectious diseases encountered during amphibious operations from both the etiological and the epidemiological viewpoints.

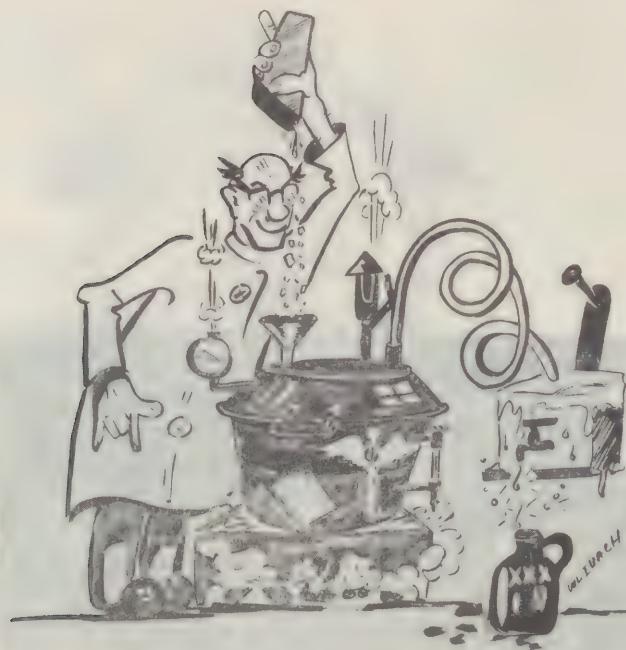
Frequent and varied field problems peculiar to amphibious operations furnish abundant "on the spot" opportunities to study those diseases which under certain conditions may interfere with the efficient and/or successful conclusion of military operations to a significant degree.

Facilities consist of three laboratories and a walk-in cold room equipped with a compressor cooled, steam driven, jacketed Sharples Super-centrifuge and desk space for titrations and processing which require low temperatures. In one of the laboratories are two sterile transfer rooms equipped with ultraviolet "steri-lamps" and closed system air conditioning. This laboratory likewise contains facilities for photomicrography.



BACTERIOLOGY LABORATORY

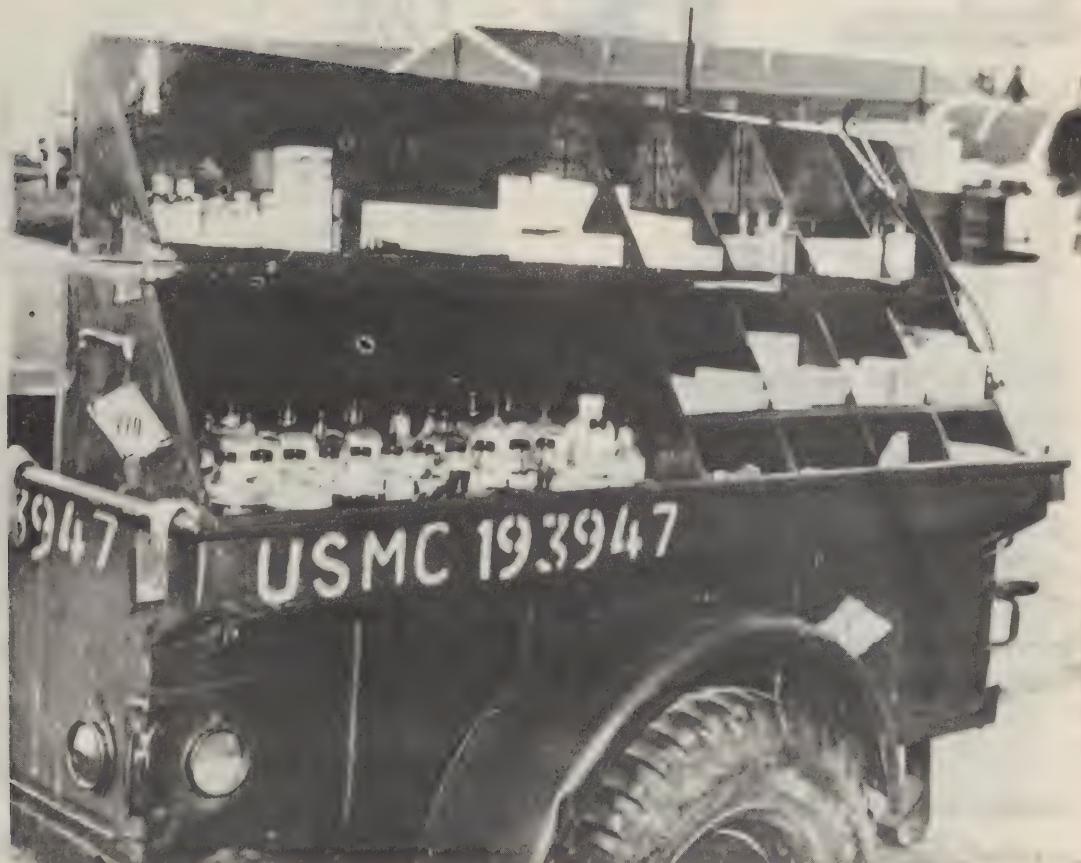
DEPARTMENT OF PHARMACY



The Department of Pharmacy is primarily concerned with improving those aspects of pharmacy which are common to field medical units serving the Marine Corps. This includes methods of packaging and storing pharmaceuticals and biologicals which are subject to deterioration and breakage under the abnormal conditions of combat. There is always the search for better methods of dispensing and administering medicaments under the most adverse conditions; e.g. quick, easy and practical methods for packaging and administering quick acting antidotes. Research and development of this type necessarily involves close cooperation with the various other departments of the Research Laboratory.

Before new medicinals and/or their containers are accepted for use and standardized, they are exposed to simulated and actual field conditions of storage and transportation in order to determine whether they will remain usable under foreseeable extremes of temperature, pressure and humidity. Likewise, certain items must be packaged to withstand exposure to salt water and its accompanying atmosphere.

Methods for dispensing medicines in the field must be modernized from time to time in order to keep abreast of modern warfare tactics and pharmaceutical practices. Recently this laboratory, in conjunction with personnel of a medical battalion serving the Marine Corps in the field, developed and constructed a compact dispensing chest which could be carried in a jeep trailer and used in situ.



FIELD DISPENSING CHEST IN JEEP TRAILER

DEPARTMENT OF CHEMISTRY



The Department of Chemistry is charged with the investigation in chemistry and related fields as applied to the mission of the laboratory. It further has the mission of providing the other departments in the laboratory support in Biochemistry, Chemistry, and Radio Isotope Tracer techniques.

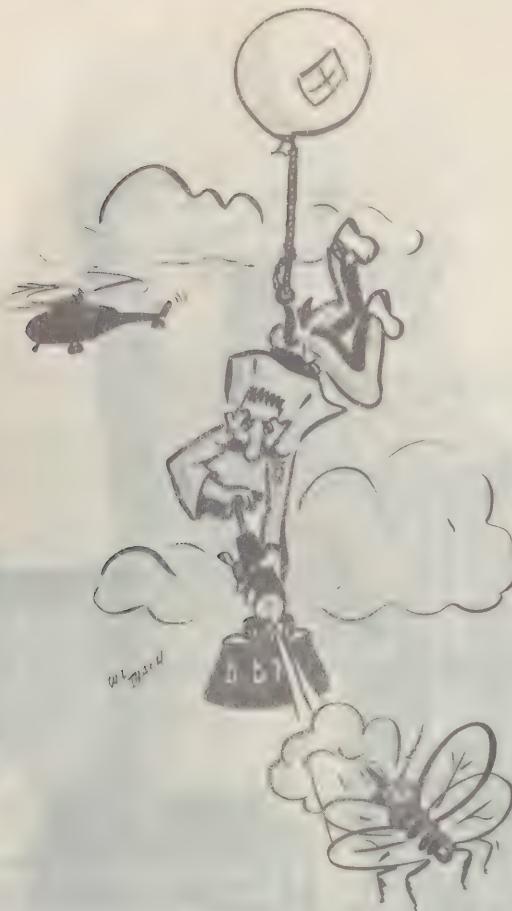
Adequate facilities for chemical analyses are maintained and preliminary analyses of suspected drug or alcohol samples are carried out routinely for base law enforcement activities.

Special equipment available for radio isotope tracer work includes Geiger Muller and scintillation counting.

The method of treatment of snake bite has been a long term study of this department. Electrophoretic and animal studies in this field are a current project.



CHEMISTRY LABORATORY



The principle mission of this department is to devise and develop new and more effective control procedures to combat insect and other arthropod vectors of disease; to develop new and more effective techniques, devices, and equipment for field sanitation usage; to maintain a continual evaluation of existing field sanitation and hygienic practices for the purpose of providing the best possible environmental health conditions for troops in the field.

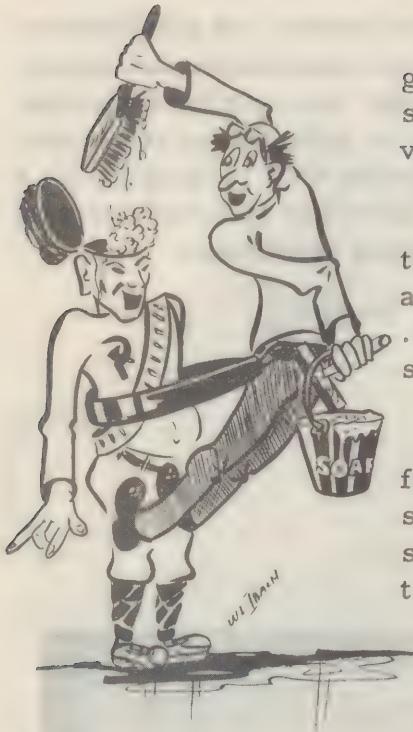
Several field sanitation study projects are currently in progress. One of these includes testing the 400 gallon aluminum field water trailer to determine the effectiveness of insulation in preventing or retarding freezing in cold weather operations. Another project involves the modification of the power field shower unit for the purpose of delivering bacteria-free shower water from a contaminated water source. Tests are also underway to develop and standardize a more effective grease trap for field operations.

Complete equipment and laboratory facilities are available to conduct entomological life history studies; insect environmental evaluations; and to test, develop, and evaluate aircraft insecticide dispersal equipment. One current project includes testing the effectiveness, adaptability, and practicality of using the Marine Corps HRS helicopter as a means of dispersing an insecticide spray over different types of terrain, vegetative cover and under various meteorological conditions.



INSECTICIDE SPRAYING TESTS

DEPARTMENT OF PSYCHOLOGY



The mission of this department is to engage both in basic psychophysiological research and applied studies which have relevance to amphibious operations.

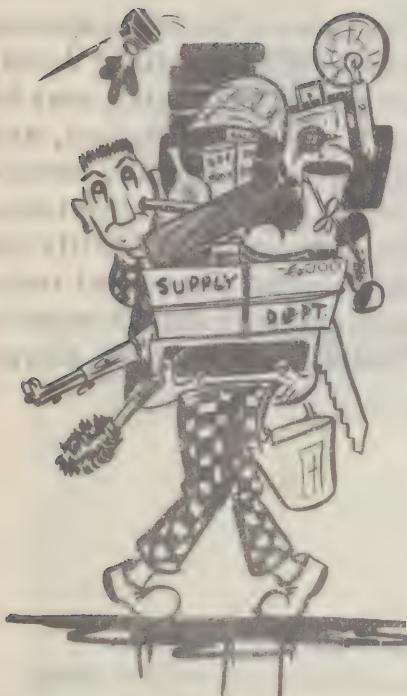
One field study in progress is an attempt to determine whether psychological traits play a significant role in marksmanship with the .45 caliber pistol and, if true, to remedy the situation with a training aid.

Considerable work has been done in the field of automobile accident prevention with special emphasis being placed on the relationship of the operator's psychological makeup to accident proneness.



A DEVICE PROPOSED AS A TRAINING AID
IN THE USE OF SMALL ARMS

SUPPLY AND FINANCE DEPARTMENT

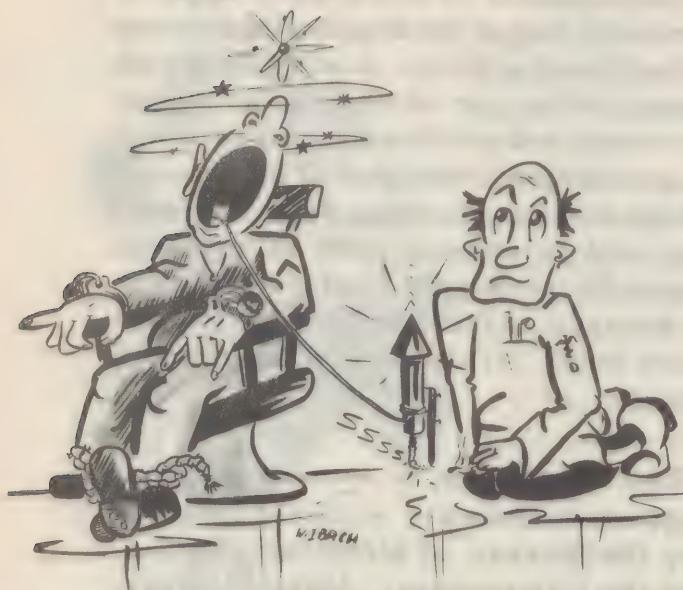


The mission of the Supply Department parallels that of the Supply Department of any other Naval activity. It is charged with the responsibility for obtaining the equipment, material and services required by the various professional sections of the laboratory. This entails obtaining prices, requisitioning, and purchasing from other Naval and Marine Corps Supply Centers and from civilian sources. Fiscal accounting for appropriated funds is also a function of this department.

The department is somewhat unique in that appropriations are received from two sources, the Bureau of Medicine and Surgery and the Commandant, Marine Corps. Therefore, the department head wears two hats - Finance Officer for Navy and Accountable Officer for Marine Corps.



SUPPLY AND FINANCE OFFICE



The mission of this department is to conduct tests of new field dental equipment or material which may be submitted for possible adoption, and further, to participate in any developmental projects on field dental material. This department fulfills its mission with dental personnel temporarily assigned by dental activities attached to the Marine Corps Base.

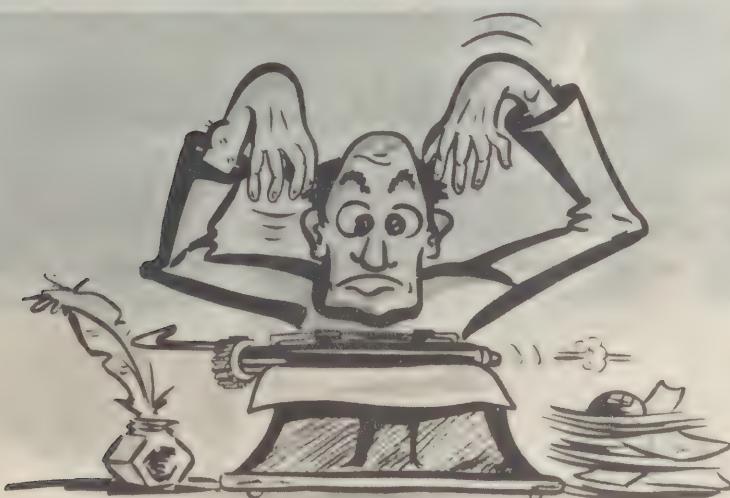


FIELD DENTAL UNIT

ADMINISTRATIVE DEPARTMENT



The Administrative Department has cognizance of the clerical force which prepares and distributes research reports and routine correspondence; administers all personnel matters; supervises the Art, Photographic and Reproduction Departments, and the Library. The Art, Photographic and Reproduction Departments support the other branches of the laboratory, performing necessary work in connection with the preparation of research projects, reports and miscellaneous requirements as requested.





The library provides a service which is indispensable to the research and development departments of the Laboratory. In addition to maintaining and providing scientific technical literature for the staff of the Laboratory, the library is available for use by all personnel stationed in the area.

The resources of the library include approximately 10,000 bound volumes of scientific books and periodicals, numerous unbound volumes of current issues and about 11,000 research reports and technical publications. The library subscribes to more than 175 scientific periodicals. A librarian is on hand to assist personnel in locating desired information and data.



TECHNICAL LIBRARY

THE NAVAL FIELD MEDICAL AND DENTAL MATERIAL BOARD

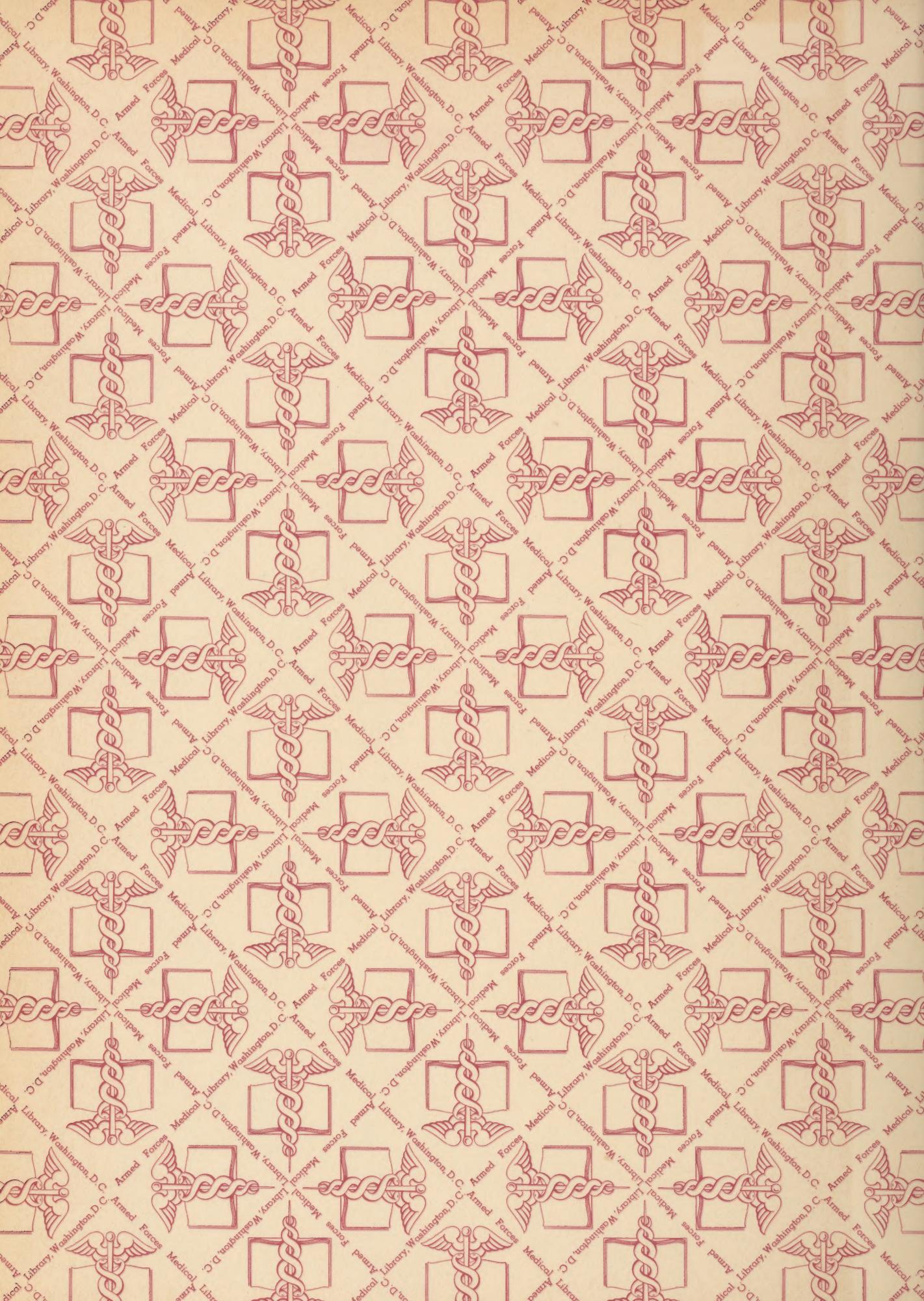
The Naval Field Medical and Dental Material Board has its headquarters at the Laboratory and consists of seven members and a secretary.

The Commanding Officer of the Laboratory is ex-officio president of this board. Other members are appointed from the more experienced senior medical and dental officers serving the Marine Corps in the area of Camp Lejeune and Headquarters Marine Corps.

The objectives of this board are: To make a complete and continuing study of all present field medical and dental equipment with particular reference to necessity, practicability, durability, packaging, etc. in any type terrain and climate; To recommend the elimination from the Table of Allowances of those items which are superfluous, obsolete or impractical for use, and the addition of such items as are essential and have proven upon investigation to be suitable; To assist the Laboratory by recommendations and advice in the field of testing and development of new items considered essential for field use.

This board operates in close liaison with the Navy Medical and Dental Material Board on matters involving field medical material. It further cooperates with the Army Research and Development Board and Marine Corps Equipment Board in the development of items of common interest.





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